

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 12. This sheet, which includes Fig. 12, replaces the original sheet including Fig. 12.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 10-25 are pending in this application. Claims 10, 12, 19, 20, and 22 are amended and Claims 23-25 are added by the present amendment.

Amendments to the claims find support in the specification and drawings as originally filed, at least at paragraphs [0011]-[0014] and Figure 2. Thus, no new matter is added.

In the Office Action dated December 9, 2008, the drawings were objected to; Claims 10 and 11 were rejected under 35 U.S.C. § 102(b) as anticipated by Japanese Patent 60-179535 to Shimazaki; Claims 10, 19, and 20 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,739,610 to Nemoto et al. (herein "Nemoto"); Claim 10 was rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 2,663,387 to Berkovitz; Claim 11 was rejected under 35 U.S.C. § 103(a) as unpatentable over Berkovitz in view of Shimazaki; Claim 22 was rejected under 35 U.S.C. § 103(a) as unpatentable over Shimazaki in view of U.S. Patent 5,945,644 to Jang; Claim 22 was rejected under 35 U.S.C. § 103(a) as unpatentable over Berkovitz in view of Jang; and Claims 12-18 and 21 were indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Initially, Applicants gratefully acknowledge the indication of allowability of Claims 12-18 and 21. Accordingly, new Claim 25 is added to recite the features of allowable Claim 12 and independent Claim 10 from which Claim 12 depends. Accordingly, it is respectfully submitted that new Claim 25 is also allowable.

Further, Applicants and Applicants' representative gratefully acknowledge the courtesy of a personal interview with Examiner Williams on January 29, 2009. During the interview, differences between references in the Office Action and the claimed invention

were discussed. Examiner Williams indicated the amended claims appear to patentably define over the references in the Office Action. Comments and claim amendments discussed during the interview are reiterated below.

Regarding the objections to the drawings, Figure 12 is amended to indicate reference number 73a as suggested in the Office Action. Also, Applicants respectfully submit that the subject matter of Claim 22 is shown in the drawings. Applicants' Figure 4 shows a non-limiting embodiment of a power supply apparatus (e.g., a power supply) configured to cause currents to flow to generate an electromagnetic force. In this example, the currents can be obtained by closing a switch 31 and opening a switch 32 to discharge a charge, which is previously charged in a capacitor 33 from a DC power supply 30 (e.g., an emergency battery) by opening the switch 31 and closing the switch 32.¹ Accordingly, it is respectfully requested the objections to the drawings be withdrawn.

Applicants respectfully traverse the rejection of Claims 10 and 11 under 35 U.S.C. § 102(b) as anticipated by Shimazaki.

Amended Claim 10 is directed to a braking device for an elevator that includes, in part, a braking mechanism which is connected to one end of a movable plunger and is configured to move through a movable range in an axial direction of the movable plunger from a braking state to a releasing state and move through the movable range in a reverse axial direction of the movable plunger from the releasing state to the braking state. The braking device also includes a first drive mechanism using a mechanical or magnetic force to press the movable plunger in the axial direction and hold the movable plunger in the releasing state when the movable plunger is in a first portion of the movable range. The first drive mechanism is also configured to press the movable plunger in the reverse axial direction and hold the movable plunger in the braking state when the movable plunger is in a second

¹ Specification at paragraph [0015] and Figure 4.

portion of the movable range. Further, the braking device includes a second drive mechanism using an electromagnetic force to drive the movable plunger from the first portion of the movable range to the second portion of the movable range for switching to the braking state and drive the movable plunger from the second portion of the movable range to the first portion of the movable range for switching to the releasing state. Independent Claim 22 includes similar features directed to a different class and scope of invention.

Applicants' Figure 1 shows a non-limiting example of a braking device for an elevator including a belleville spring 10 (e.g., a first drive mechanism) and a drive portion 20 (e.g., a second drive mechanism). Figure 2 shows a non-limiting example of a travel distance of a movable plunger 5 and a force generated by the first drive mechanism in this example, in the direction marked A in Figure 1 (e.g., an axial direction). In this example, a range of the plunger is identified as 10.0 (e.g., a movable range) and when the movable plunger is in the range of 0.0 to approximately 5.0 (e.g., a first portion of the movable range), the first drive mechanism presses the plunger with a positive force in direction A and holds the plunger in a releasing state, and when the movable plunger is in a distance between approximately 5.0 and 10.0 (e.g., a second portion of the movable range), the first drive mechanism of this example applies a negative force to move the plunger in a direction B as shown in Figure 1 (e.g., a reverse axial direction) and holds the plunger in a braking state.

Thus, in an embodiment according to Figures 1 and 2, the brake releasing state and braking state are both caused by the reversion of the belleville spring, so energy required for switching state is that of merely reversing the mechanism, that is, about half of a stroke. In other words, a small energy suffices, while the conventional brake needs large energy to attract an armature against a spring force generating a braking force.²

² Specification at paragraph [0016].

As discussed during the interview, Shimazaki fails to teach or suggest each of the features of amended Claims 10 or 22. For example, Shimazaki fails to teach or suggest a first drive device that presses a movable plunger in an axial direction and holds the movable plunger in a releasing state when the movable plunger is in a first portion of a movable range and presses the movable plunger in the reverse axial direction and holds the movable plunger in a braking state when the movable plunger is in a second portion of the movable range.

Shimazaki indicates a brake device in an elevator configured to reduce a braking distance and shock upon stop of an elevator.³ According to the Abstract and Figure 3 of Shimazaki, a brake spring 19 overcomes a braking force caused by a resilient member 21. In other words, according to Shimazaki, the brake spring 19 and resilient member 21 operate to produce forces in opposite directions, and Shimazaki fails to teach or suggest a drive mechanism using mechanical and magnetic force that presses a movable plunger in an axial direction and a reverse axial direction depending upon whether the movable plunger is in a first portion of a movable range or a second portion of a movable range. Accordingly, as discussed during the interview, Shimazaki fails to teach or suggest “a first drive mechanism using a mechanical or magnetic force to press said movable plunger in the axial direction and hold said movable plunger in the releasing state when the movable plunger is in a first portion of the movable range, and to press said movable plunger in the reverse axial direction and hold said movable plunger in the braking state when the movable plunger is in a second portion of the movable range,” as recited in independent Claim 10, and as similarly recited in Claim 22.

Therefore, it is respectfully submitted that independent Claims 10 and 22 patentably define over Shimazaki.

³ Shimazaki at Purpose.

Accordingly, it is respectfully requested the rejection of Claims 10 and 11 under 35 U.S.C. § 102(b) as anticipated by Shimazaki be withdrawn.

In addition, Applicants respectfully traverse the rejection of Claims 10, 19, and 20 under 35 U.S.C. § 102(b) as anticipated by Nemoto.

As discussed during the interview, Nemoto also fails to teach or suggest each of the features of independent Claim 10. For example, Nemoto also fails to teach or suggest a first drive mechanism that presses a movable plunger in an axial direction when the movable plunger is in a first portion of a movable range and presses the movable plunger in a reverse axial direction when the movable plunger is in a second portion of the movable range.

Nemoto describes an electromagnetic device including a magnetic drive voltage that is normally applied to a normal use coil (2).⁴ In addition, Nemoto indicates that a braking spring (5) provides braking force to the armature. In other words, according to Nemoto, a coil (2) is energized to release a braking force of braking spring (5). Accordingly, Applicants respectfully submit that Nemoto fails to teach or suggest “a first drive mechanism using a mechanical or magnetic force to press said movable plunger in the axial direction and hold the movable plunger in the releasing state when the movable plunger is in a first portion of the movable range, and to press said movable plunger in the reverse axial direction and hold said movable plunger in the braking state when the movable plunger is in the second portion of the movable range,” as recited in Claim 10.

Therefore, Applicants respectfully submit that independent Claim 10 patentably defines over Nemoto.

Accordingly, it is respectfully requested the rejection of Claims 10, 19, and 20 under 35 U.S.C. § 102(b) as anticipated by Nemoto be withdrawn.

⁴ Nemoto at column 4, lines 45-47.

Moreover, Applicants respectfully traverse the rejection of Claim 10 under 35 U.S.C. § 102(b) as anticipated by Berkovitz.

Berkovitz describes an elevator brake and indicates that upon energization of a winding 42 a plunger is pulled downwardly and forces ends of levers 40 in a direction to move upper ends of brake arms 18 outwardly against the forces of springs 24.⁵ Further, Berkovitz indicates that as long as the winding 42 is energized, which is during normal running of the car, the brake shoes are maintained released.⁶ In other words, Berkovitz describes a conventional elevator brake in which an energized winding overcomes a force of a spring to place the brake in a release position.

Therefore, as discussed during the interview, Berkovitz also fails to teach or suggest “a first drive mechanism using a mechanical or magnetic force to press said movable plunger in the axial direction and hold said movable plunger in the releasing state when the movable plunger is in a first portion of the movable range, and press said movable plunger in the reverse axial direction and hold said movable plunger in the braking state when the movable plunger is in a second portion of the movable range,” as recited in independent Claim 10, and as similarly recited in Claim 22.

Therefore, it is respectfully submitted that independent Claims 10 and 22 also patentably define over Berkovitz.

Accordingly, it is respectfully requested the rejection of Claim 10 under 35 U.S.C. § 102(b) as anticipated by Berkovitz also be withdrawn.

Further, Applicants respectfully traverse the rejection of Claim 11 under 35 U.S.C. § 103(a) as unpatentable over Berkovitz in view of Shimazaki.

⁵ Berkovitz at column 2, lines 48-52.

⁶ Berkovitz at column 2, lines 52-55.

Claim 11 depends from Claim 10, which as discussed above is believed to patentably define over each of Berkovitz and Shimazaki. Accordingly, it is respectfully requested the rejection of Claim 11 be withdrawn.

In addition, Applicants respectfully traverse the rejection of Claim 22 under 35 U.S.C. § 103(a) as unpatentable over Shimazaki or Berkovitz in view of Jang. As discussed above, Shimazaki and Berkovitz fail to teach or suggest the features of Claim 22. In addition, Applicants respectfully submit that Jang also fails to teach or suggest the features of Claim 22 that are missing from the disclosures of Shimazaki and Berkovitz.

Accordingly, Applicants respectfully submit that Claim 22 patentably defines over Shimazaki, Berkovitz, and Jang, whether taken individually or in combination.


Accordingly, it is respectfully requested the rejections of Claim 22 under 35 U.S.C. § 103(a) as unpatentable over Shimazaki in view of Jang, and Berkovitz in view of Jang, be withdrawn.

Accordingly, Applicants respectfully submit that independent Claims 10, 22, and 25, and claims depending therefrom, are allowable.

Consequently, in light of the above discussion and in view of the present amendment this application is believed to be in condition for allowance and an early favorable action to that effect is respectfully requested.

Respectfully submitted,

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